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The Mineral Industry of Mississippi

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This publication is a chapter from the current Bureau of Mines Minerals Yearbook, comprising *Volume I, Metals and Minerals; Volume II, Area Reports: Domestic; Volume III, Area Reports: International.* The separate volumes of the Yearbook are sold by the Superintendent of Documents, Washington, D.C. 20402.

The Mineral Industry of Mississippi

This chapter has been prepared under a Memorandum of Understanding between the Bureau of Mines, U.S. Department of the Interior, and the Bureau of Geology and Energy Resources, Mississippi Department of Natural Resources, for collecting information on all nonfuel minerals.

By James R. Boyle,[1] Maylene E. Hubbard,[2] and Alvin R. Bicker[3]

The value of Mississippi's nonfuel mineral industry in 1984 was $94.2 million, an increase of 5% over that of 1983. Although relatively small, the increase continued an upward trend that has lasted for 2 years. Mississippi's weak economy began to recover substantially early in the year, but the onset of higher interest rates affected the economy severely after midyear, resulting in only a minor recovery.

Mississippi ranked second nationally in the production of recovered sulfur, and third in bentonite and fuller's earth. Major commodities produced were cement, clays, sand and gravel, and stone. Although output increased, total value was still below the peak years of 1978 through 1980. The increased output was attributed to a slight upturn in construction activities, which peaked by midyear. Mississippi ranked 41st nationally in value of nonfuel minerals produced.

Table 1.—Nonfuel mineral production in Mississippi[1]

Mineral	1983		1984	
	Quantity	Value (thousands)	Quantity	Value (thousands)
Clays thousand short tons	1,446	$23,846	2,398	$30,565
Sand and gravel (construction) do.	e11,000	e34,600	12,205	34,955
Stone (crushed) do.	1,651	4,377	e2,000	e5,800
Combined value of cement and sand and gravel (industrial)	XX	26,882	XX	22,858
Total	XX	89,705	XX	94,178

eEstimated. XX Not applicable.
[1]Production as measured by mine shipments, sales, or marketable production (including consumption by producers).

Table 2.—Value of nonfuel mineral production in Mississippi, by county[1]

(Thousands)

County	1982	1983	Minerals produced in 1933 in order of value
Adams	W	[2]	
Benton	W	W	Clays.
Bolivar	$227	[2]	
Carroll	W	[2]	
Clay	W	W	Stone (crushed).
Copiah	4,814	[2]	
DeSoto	2,751	[2]	
Forrest	W	[2]	
George	40	[2]	
Hancock	81	[2]	
Harrison	40	[2]	
Hinds	W	$736	Clays.
Holmes	W	[2]	
Itawamba	1,654	[2]	
Jackson	W	W	Sand and gravel (industrial).
Jasper	54	[2]	
Jefferson Davis	16	[2]	
Jones	W	W	Clays.
Kemper	W	W	Do.
Lauderdale	W	W	Do.
Lincoln	W	[2]	
Lowndes	W	W	Cement, stone (crushed), clays.
Marion	1,260	[2]	
Marshall	W	W	Clays.
Monroe	7,373	5,952	Do.
Noxubee	W	W	Clays, stone (crushed).
Panola	W	W	Clays.
Pearl River	353	[2]	
Perry	11	[2]	
Pike	W	[2]	
Rankin	[2]	—	
Smith	[2]	W	Stone (crushed).
Stone	W	[2]	
Tippah	W	W	Clays.
Tishomingo	W	W	Stone (crushed), sand and gravel (industrial).
Walthall	154	[2]	
Warren	W	[2]	
Washington	W	[2]	
Wayne	[2]	216	Stone (crushed).
Winston	W	W	Clays.
Yalobusha	W	[2]	
Yazoo	W	[2]	
Undistributed[4]	53,854	48,199	
Sand and gravel (construction)	XX	e34,600	
Stone (crushed)	W	XX	
Total[5]	72,685	89,705	

eEstimated. W Withheld to avoid disclosing company proprietary data; included with "Undistributed." XX Not applicable.

[1]No nonfuels mineral production was reported for counties not listed.

[2]Construction sand and gravel was produced; data not available by county. Total State value is shown separately under "Sand and gravel (construction)."

[3]Crushed stone was produced; data not available by county. Total State value is shown separately under "Stone (crushed)."

[4]Includes mineral production that cannot be assigned to specific counties and values indicated by symbol W.

[5]Data do not add to totals shown because of independent rounding.

Table 3.—Indicators of Mississippi business activity

		1982[r]	1983	1984[p]
Employment and labor force, annual average:				
Population	thousands	2,567	2,581	2,598
Total civilian labor force	do.	1,065	1,064	1,074
Unemployment	do.	117	134	116
Employment (nonagricultural):				
Mining total[1]	do.	11.8	8.8	9.2
Nonmetallic minerals except fuels[2]	do.	.9	.7	NA
Oil and gas extraction	do.	11.0	8.1	8.4
Manufacturing total	do.	203.2	204.7	218.6
Primary metal industries[2]	do.	12.5	12.2	NA
Stone, clay, and glass products	do.	5.7	5.7	6.2
Chemicals and allied products	do.	6.5	6.5	6.8
Petroleum and coal products	do.	1.9	2.1	2.1
Construction	do.	39.6	36.2	37.6
Transportation and public utilities	do.	39.6	38.6	39.1
Wholesale and retail trade	do.	161.6	165.2	175.5
Finance, insurance, real estate	do.	32.9	33.5	34.2
Services	do.	122.1	124.6	125.5
Government and government enterprises	do.	180.0	181.1	183.5
Total[3]	do.	790.0	792.8	823.1
Personal income:				
Total	millions	$19,939	$20,810	$22,802
Per capita		$7,762	$8,062	$8,777
Hours and earnings:				
Total average weekly hours, production workers		38.1	40.1	40.6
Total average hourly earnings, production workers		$6.41	$6.70	$6.95
Earnings by industry:				
Farm income	millions	$467	$332	$748
Nonfarm	do.	$13,275	$13,918	$15,081
Mining total	do.	$380	$257	$278
Nonmetallic minerals except fuels	do.	$14	$12	$13
Oil and gas extraction	do.	$366	$245	$265
Manufacturing total	do.	$3,404	$3,448	$4,503
Primary metal industries	do.	$69	$76	$93
Stone, clay, and glass products	do.	$106	$114	$125
Chemicals and allied products	do.	$155	$164	$186
Petroleum and coal products	do.	$74	$91	$99
Construction	do.	$867	$798	$793
Transportation and public utilities	do.	$1,015	$1,056	$1,124
Wholesale and retail trade	do.	$2,087	$2,229	$2,445
Finance, insurance, real estate	do.	$583	$649	$702
Services	do.	$1,984	$2,160	$2,341
Government and government enterprises	do.	$2,785	$2,935	$3,123
Construction activity:				
Number of private and public residential units authorized		6,207	9,770	10,877
Value of nonresidential construction	millions	$169.3	$205.9	$254.8
Value of State road contract awards	do.	$108.0	$202.0	$235.2
Shipments of portland and masonry cement to and within the State	thousand short tons	712	767	850
Nonfuel mineral production value:				
Total crude mineral value	millions	$72.7	$89.7	$94.2
Value per capita		$28	$35	$36

[p]Preliminary. [r]Revised. NA Not available.

[1]Bureau of Labor Statistics, U.S. Department of Labor; totals may not add because of inclusion of data from other sources.

[2]Bureau of Economic Analysis, Regional Economic Measurement Division, U.S. Department of Commerce.

[3]Data may not add to totals shown because of independent rounding.

Sources: U.S. Department of Commerce, U.S. Department of Labor, Highway and Heavy Construction Magazine, and U.S. Bureau of Mines.

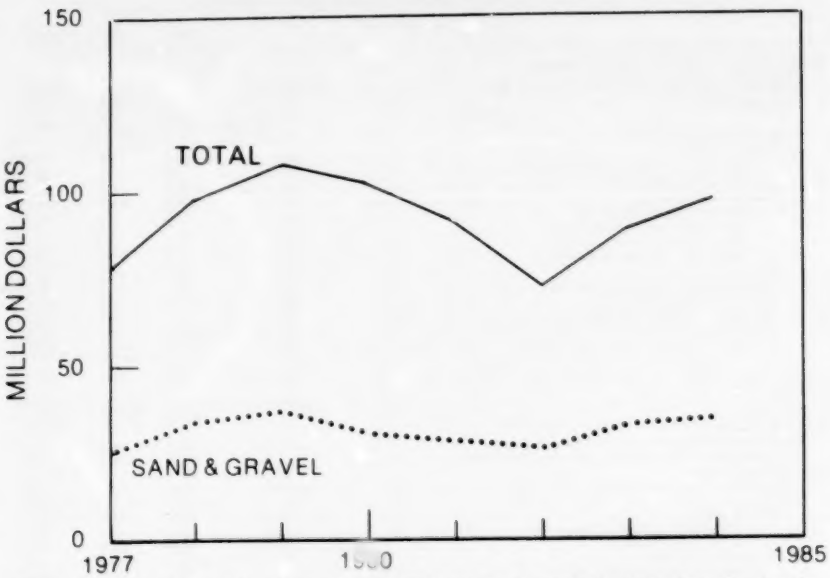

Figure 1.—Value of sand and gravel and total value of nonfuel mineral production in Mississippi.

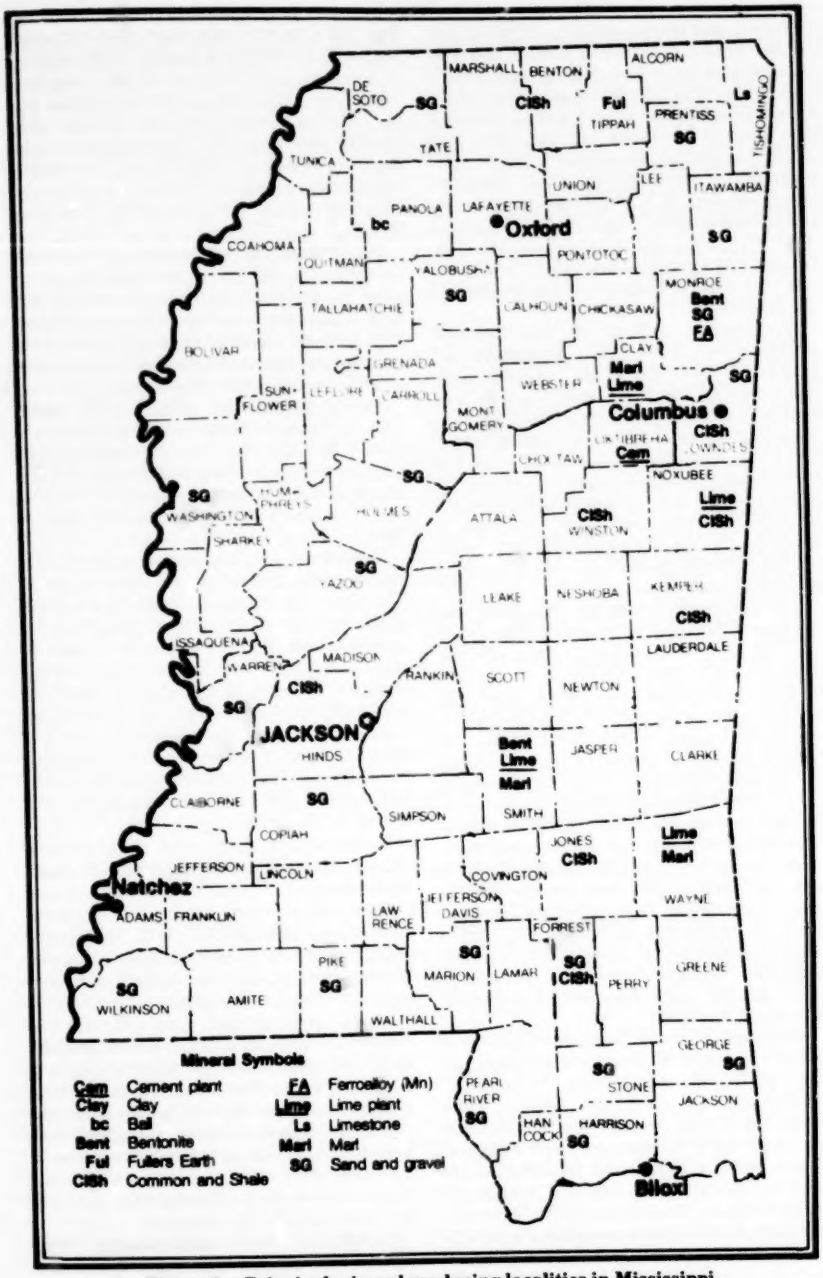

Figure 2.—Principal mineral producing localities in Mississippi.

Trends and Developments.—Mississippi's limited output of minerals is tied closely to construction activities. The unemployment rate, which also mirrors construction activity, declined to 9.5% at midyear as construction activity increased. The rate then rose sharply in the fourth quarter to 11.0% with declines in construction-related manufacturing sectors. Rising interest rates during the second quarter triggered the decline in Mississippi's interest-sensitive construction, textile, and apparel industries.[4] The State's recovery still remains one of the weakest in the Southeast.

Mississippi's exports of manufactured products grew faster than production and generated about 9% of its manufacturing jobs,[5] leaving the State vulnerable to new economic setbacks because of the relatively high proportion of its work force in manufacturing. The production tax on sand and gravel and crushed stone, in essence a severance tax, increased to 6%, up from 5% in 1983. However, with the exception of operations in direct competition with nearby out-of-State operations, this tax had a minimal impact on output.

The Tennessee-Tombigbee Waterway was completed during 1984 and was expected to open early in 1985. Producers were adversely impacted by the completion as demand for sand and gravel and crushed stone fell. Maintenance requirements for the waterway and the Mississippi River amount to about 1 million short tons of stone per year. The major portion of these requirements are for the Mississippi River and are obtained from sources in Arkansas and Tennessee. Renovation and expansion have been started at port facilities at Mobile, AL, Gulfport and Pascagoula, MS, and Pensacola, FL, with ready access to the Port of New Orleans for worldwide shipping. Major commodities expected to move over the new waterway include aggregate, chemicals, coal, metallic ores, nonmetallic minerals, petroleum, and steel.

Development of the Tennessee-Tombigbee Waterway could be a positive influence on Kerr-McGee Chemical Corp. to continue developing its Hamilton facility. The Hamilton facility consists of titanium dioxide, electrolytic manganese, and chemical plants. About 100,000 short tons of material per year, currently shipped by rail, could be transported on the waterway. In 1984, the titanium dioxide plant completed a $4 million expansion program and increased production capacity to 63,000 tons per year. In the latter part of the year, the company announced a second expansion of $8 million to increase production to 72,000 tons per year. The expansion, to be completed by mid-1986, will result in about 20 new permanent jobs. Feedstock for the plant comes from Kerr-McGee's Mobile, AL, synthetic rutile plant, which should be able to supply all of the needs of the expanded Hamilton plant.

The Mississippi Department of Economic Development (MDED) announced 19 expansions in mineral-related industries during 1984. The expansions were noted as follows: clay industry (eight), steel and foundries (six), concrete products (two), sand and gravel (two), and titanium dioxide (one).

During fiscal year 1984, 177,428 short tons of ilmenite from Australia was imported through the Port of Gulfport and shipped to E. I. du Pont de Nemours & Co.'s titanium dioxide operations at Pass Christian. This was a slight increase over that of 1983.

KemaNord Inc. announced planned expansions for its sodium chlorate plant in Columbus to increase production from 58,000 to 98,000 short tons per year by midyear 1985. Sodium chlorate is used to bleach pulp and as an oxidizing agent in the uranium industry. KemaNord is the U.S. subsidiary of KemaNord AB of Sweden, which will become the world's largest producer of sodium chlorate with expansions announced in 1984. Salt from Louisiana will be barged up the Tennessee-Tombigbee Waterway to the plant.

Phelps Dodge Corp. sold its Starkville building wire and cable plant and its related businesses to Hi-Tech Cable Corp., a new independent company made up of the management at the Starkville plant. The plant's major product is copper building wire, and the new owners announced plans to continue and strengthen the existing operation.

In the energy sector, the oil and gas industry, despite weakening prices, improved in 1984 over depressed activity levels of 1983. Employment was up 4% as drilling activity increased slightly; output from producing wells also increased slightly over that of 1983. Although lignite reserves in the State were estimated at over 5 billion short tons, plans to develop this resource have been indefinitely delayed.

Legislation and Government Programs.—During the year, the Mississippi Bureau of Geology and Energy Resources

continued investigation of the geology and mineral resources of the State. The Surface Section completed field investigations in Newton County and initiated work in Tishomingo County. The Subsurface Section prepared regional subsurface maps and maintained the Sample and Core Library. The Mineral Lease Section leased State-owned lands for mineral exploration. Income derived from leasing, royalty, and permit activity totaled $432,000 during the year. The Groundwater Section completed 244 electric logs of water wells and began obtaining ground water data in Alcorn and Tishomingo Counties. An "Economic Minerals Map of Mississippi" and a "Minerals Producers Directory—1984" were published during the year. The Surface Mining Section continued to administer the Surface Mining Act of 1977.

The Mississippi Mineral Resources Institute at Oxford continued mineral resources investigations during the year. Programs conducted included studies of heavy minerals offshore, utilization of zeolite and various clay types, examination of Landsat reflectivity, and several energy related studies involving both lignite and oil and gas. The institute continued an ongoing program designed to aid in the commercialization of minerals in the State. The program emphasized research to identify minerals with potential for development and methods to assist bringing those minerals into development. In fiscal year 1984, the U.S. Bureau of Mines allotted $150,000 to the institute to foster and support graduate education in mineral sciences and engineering.

Late in the year, the U.S. Bureau of Land Management (BLM) identified 78 parcels of land in Mississippi covering 6,013 acres of unleased Federal land presumed to contain oil and gas leases. BLM proposed to publish a notice in 1985 detailing the location of these unleased parcels to determine priority of leasing.

The U.S. Bureau of Mines placed a $100,000 contract with Jackson State University, Jackson, to study the characteristics of respirable mine dust.

The U.S. Geological Survey conducted various basic geologic and geophysical studies within the State of Mississippi. The Survey published Professional Paper 1300, "Wilderness Mineral Potential," which includes the Sandy Creek Roadless Area in Mississippi. The report was prepared in cooperation with the U.S. Bureau of Mines.

The U.S. Department of the Interior scheduled a meeting late in the year with representatives of seven coastal State governors, including Mississippi, to discuss issues under section 8(g) of the Outer Continental Shelf Lands Act. Section 8(g) requires the Secretary of the Interior to offer the Governor of the affected State the opportunity to enter into a fair and equitable agreement concerning the disposition of revenues generated by a Federal lease within 3 miles of the seaward boundary of the State containing pools of oil and gas that underlie both State and Federal waters. No agreement was reached during the year.

REVIEW BY NONFUEL MINERAL COMMODITIES

NONMETALS

Nonmetals accounted for all of Mississippi's nonfuel mineral production in 1984. Commodities produced included cement, clays, sand and gravel, and crushed stone.

Cement.—United Cement Co. was the sole producer of cement in Mississippi. The plant, in Artesia, Lowndes County, is in the east-central part of the State. The company's primary output was portland cement, with minor amounts of masonry cement. Portland cement shipments decreased along with unit prices; masonry cement output increased.

Principal portland cement sales were to ready-mixed concrete companies, concrete product manufacturers, highway contractors, and building materials dealers. Raw materials used in cement manufacture included anhydrite, chalk, gypsum, iron ore, limestone, and sand. Clay was not required because of the high alumina content in the stone. The raw material is crushed, ground, and fired with finely ground coal in the kiln. After grinding with gypsum, the cement was shipped to markets in States in the Southeast.

Clays.—Total clay output increased substantially over that of 1983. Seventeen mining companies operated 24 pits in 12 counties, primarily in the northern and northeastern part of the State. Ball clay, bentonite, common clay, and fuller's earth were produced in Mississippi. The State ranked third nationally in output of bentonite and fuller's earth. Clays produced in the State were used in the automotive, construction, agricultural, and animal-feed industries.

Output of common clay and fuller's earth increased, while bentonite decreased and ball clay remained at the same level as that of 1983. Common clay was mined at 18 pits, primarily in Benton, Noxubee, and Hinds Counties. Major uses were for brick, concrete block, and structural concrete. Output was 1,871,000 short tons compared with 943,000 tons in 1983; this was the highest output in over 10 years. The resurgence of construction activities through midyear had a direct effect on brick companies in the State. Several companies operated at or near capacity throughout the year. Merry Co., Augusta, GA, which purchased 50% of Laurel Brick & Tile Co. in 1982, purchased the remaining portion in mid-1984. Holly Springs Brick & Tile Co. announced a $4.5 million expansion program at its plant in Holly Springs.

Ky-Tenn Clay Co. was the only producer of ball clay in Mississippi; output was from a surface mine in Panola County. The clay was processed for a variety of ceramic uses with demand remaining at a relatively low level. The product was shipped to markets primarily out of State with some going to export markets. Columbus Brick Co., Columbus, and Schneider Brick Co., Brookhaven, announced expansion plans through MDED.

Table 4.—Mississippi: Clays sold or used by producers

(Thousand short tons and thousand dollars)

Year	Bentonite		Ball clay, fire clay, fuller's earth		Common clay		Total	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
1980	275	6,234	W	W	1,054	3,292	1,596	21,714
1981	285	7,060	W	W	649	2,028	1,218	23,309
1982	232	6,063	W	W	330	1,212	805	21,181
1983	241	5,952	W	W	943	2,694	1,446	23,846
1984	208	6,304	W	W	1,871	5,631	2,398	30,565

W Withheld to avoid disclosing company proprietary data; included in "Total."

Mississippi's bentonite producers, American Colloid Co., Harshaw-Filtrol Partnership, and International Minerals & Chemical Corp. (IMC) operated four surface mines in Monroe County. Bentonite was processed for sale to the automotive industry, as a foundry binder, and to the agricultural industry for use as an animal-feed binder. Demand remained relatively low with shipments mainly to out-of-State markets. Filtrol announced an expansion of its clay desiccant facility at Jackson, which would double capacity. Clay desiccants are used as dehumidifying agents to prevent corrosion and mildew. Plant modernization of more than $1 million would include a new dryer, roll crusher, and improved storage facilities and was scheduled for completion in 1985. The calcium montmorillonite was shipped by rail from Monroe County to Jackson. Filtrol is developing a pit in Smith County with ongoing tests to determine suitability of the material. American Colloid Co. plans to produce 15,000 tons per year of acid-activated clay at its new $3.5 million facility at Aberdeen. The plant is scheduled to start up by mid-1985. Acid-activated clay is used to bleach and decolorize vegetable oils and animal fats and to refine mineral oils. IMC also announced expansion plans through MDED.

Two companies, IMC and Oil-Dri Production Co., mined fuller's earth from pits in Tippah County. The clay was processed at nearby plants for sale to the agricultural industry. Markets for fuller's earth remained low with production slightly higher than that of 1983. Oil-Dri announced expansion plans through MDED.

Nitrogen.—Cargill Inc., Chevron Chemical Co., and Mississippi Chemical Co. produced anhydrous ammonia during 1984. Total rated annual capacity of the three facilities was 991,000 short tons.

Perlite (Expanded).—Mississippi ranked first in the Nation in output of expanded perlite. Manville Products Corp., Natchez, and the United States Gypsum Co., Greenville, expanded perlite shipped in from New Mexico. The product was used in roof insulation and in formed products. Production and value increased over that of 1983.

Sand and Gravel.—Mississippi produced both construction and industrial sand and gravel in 1984. Production was from 100 companies operating 107 pits in 35 counties. Total output increased over that of 1983. None of the operations in the State produc-

ed over 1 million short tons in 1984.

Construction.—Construction sand and gravel production is surveyed by the U.S. Bureau of Mines for even-numbered years only; the 1983 chapter gave estimates. Data for odd-numbered years are based on annual company estimates made before yearend.

Construction sand and gravel was the leading commodity in value among the nonfuel minerals produced in Mississippi. Although production increased, it still has not returned to its peak production years of the 1970's. The increase in 1984 was basically due to a surge in construction activities, including highway work. Construction sand and gravel was produced at 105 operations in 34 counties. Leading counties were DeSoto, Copiah, and Holmes. The major portion of sand and gravel was shipped by truck. Valley Gravel Co., Bigbee Valley, and R. C. Cement Co., Hernando, announced expansion plans at their pits through MDED; the cost will exceed $4 million.

Table 5.—Mississippi: Construction sand and gravel sold or used in 1984, by major use category

Use	Quantity (thousand short tons)	Value (thousands)	Value per ton
Asphaltic concrete	1,186	$3,623	$3.05
Concrete aggregate	3,334	11,840	3.55
Concrete products	53	178	3.36
Fill	76	87	1.14
Plaster and gunite sands	4	12	3.00
Road base and coverings[1]	1,166	2,652	2.27
Other[2]	6,387	16,563	2.59
Total or average	[3]12,205	34,955	2.86

[1]Includes road and other stabilization (lime).
[2]Includes roofing granules and other unspecified uses.
[3]Data do not add to total shown because of independent rounding.

Industrial.—Sand for industrial uses was produced by two companies in Jackson and Tishomingo Counties. Output decreased; the material was used in sandblasting, cores, and molds.

Stone.—Stone production is surveyed by the U.S. Bureau of Mines for odd-numbered years only; therefore, this chapter contains only estimates for 1984. The data for even-numbered years are based on annual company estimates made before yearend.

Crushed stone output was estimated to have increased mainly because of increased construction and road maintenance activities that started late in 1983 and continued through most of 1984; demand for agricultural purposes decreased.

Sulfur (Recovered).—Mississippi ranked second nationally in output of recovered sulfur. Five companies recovered sulfur from refinery and natural gases. Production was reported by Shell Oil Co. in Clarke and Rankin County; Chevron U.S.A. Inc. in Jackson County; Amerada Hess Corp. in Lamar County; Pursue Gas Processing & Petrochemical Co. in Rankin County; and Koch Hydrocarbon Co. in Clarke County. Sulfur sold or used in 1984 totaled 754,000 metric tons, valued at $74.4 million, compared with 722,000 metric tons valued at $67.9 million in 1983.

METALS

Primary metal production is not a significant industry in the State, yet contributed to the economic well-being of Mississippi. Although the major production of the State's extractive mineral industry was nonmetallic, a significant metals industry existed that depended mainly on out-of-State raw materials. According to the Mississippi Research & Development Center, eight companies produced gray iron castings and three produced steel castings. Shipments of ferroalloys decreased 15.3% while value decreased 8.0%, indicating an increase in unit values. Kerr-McGee operated an electrolytic manganese facility at Hamilton utilizing pyrolusite from Gabon, West Africa.

Corhart Refractories Co. Inc., Pascagoula, imported chrome ore from the Republic of South Africa for the production of refractories. The primary use is in the form of chromite to make refractory bricks for lining metallurgical furnaces.

Six primary metal companies announced expansion plans through MDED at a cost of over $3.5 million. Companies announcing

expansion projects included ESCO Corp. (Newton), Forging Die Inc. (Olive Branch), Gipson Steel Inc. (Meridian), Shelby Die Casting Co. Inc. (Shelby), Teledyne Irby Steel Co. (Gulfport), and Vicksmetal Corp. (Vicksburg).

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[4]Wilson, G., and G. Sullivan. Mississippi: Moving Ahead, But Slowly. Economic Review, Federal Reserve Bank of Atlanta, Feb. 1985, pp. 69-76.

[5]Business America. State Export Series, Mississippi. Nov. 26, 1984, p. 15.

Table 6.—Principal producers

Commodity and company	Address	Type of activity	County
Cement:			
United Cement Co	Box 185 Artesia, MS 39736	Plant	Lowndes.
Clays:			
American Colloid Co	Box 75 Aberdeen, MS 39730	Mine and plant	Monroe.
Holly Springs Brick & Tile Co	Box 310 Holly Springs, MS 38635		
International Minerals & Chemical Corp	Box 346A Aberdeen, MS 39730	Mine	Do.
Jackson Ready Mix Concrete, a division of Delta Industries Inc.	Box 1292 Jackson, MS 39205	do	Hinds.
Sand and gravel:			
American Sand & Gravel Co	Box 272 Hattiesburg, MS 39401	Stationary plant	Forrest.
Blain Gravel Co	Box 278 Mount Olive, MS 39119	Stationary plants	Clay, Copiah, Itawamba, Marion.
Hammett Gravel Co	Box 207 Lexington, MS 39095	Mines and plants	Holmes, Marion, Pike.
Stone (crushed):			
Mississippi Stone Products	Box 338 Iuka, MS 38852	Quarry	Tishomingo.
State Department of Agriculture and Commerce.	Box 1609 Jackson, MS 39205	Quarries	Clay, Noxubee, Wayne.
United Cement Co	Box 185 Artesia, MS 39736	Quarry	Lowndes.

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